Date: 5/21/81

Time: 11:48 (A.M./P.M.)

Photograph By:

JOHN CERJOCKE

TDD# F5-8103-11

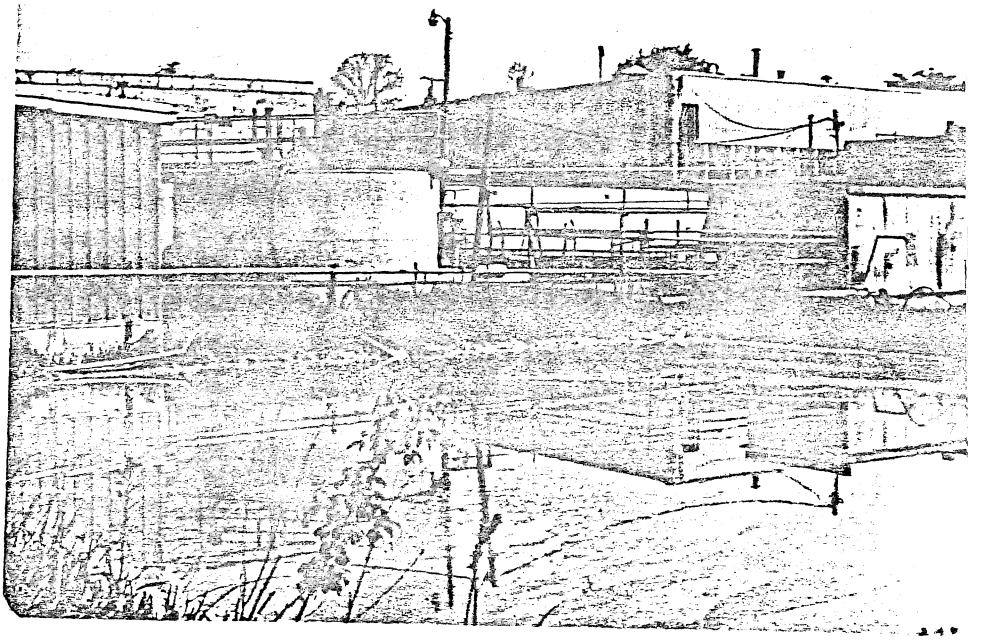
State- MICHIGAN

HOOVER B&B / WASHTENAW CO.
(SALINE DIE CASTING)

Comments: Photograph taken

toward the NORTHEAST, SHOWING

SETTLING POND #2



Date: 5/21/81

Time: 11:49 (A.M./P.M.)

Photograph By:

JOHN CERJOCKE

TDD# F5-8103-11

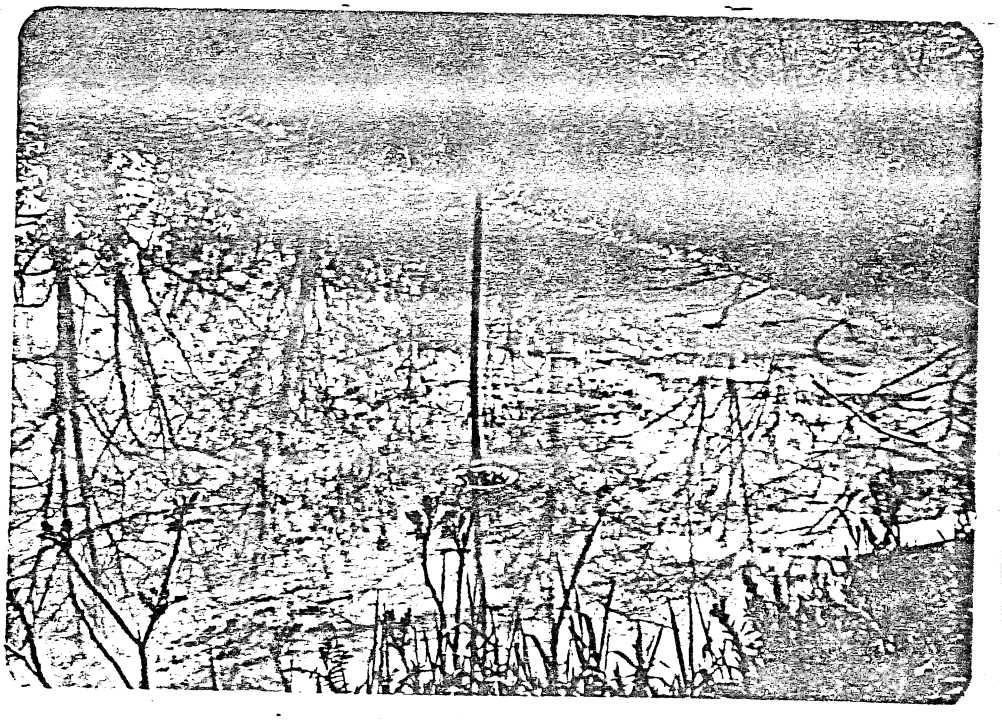
State- MICHIGAN

HOOVER B&B / WASHTENAW CO.
(SALINE DIE CASTING)

Comments: Photograph taken

toward the SOUTHEAST, SHOWING

DRAINAGE PIPE



Date: 5/21/81

Time: 11:49 (A.M.) / P.M.

Photograph By:

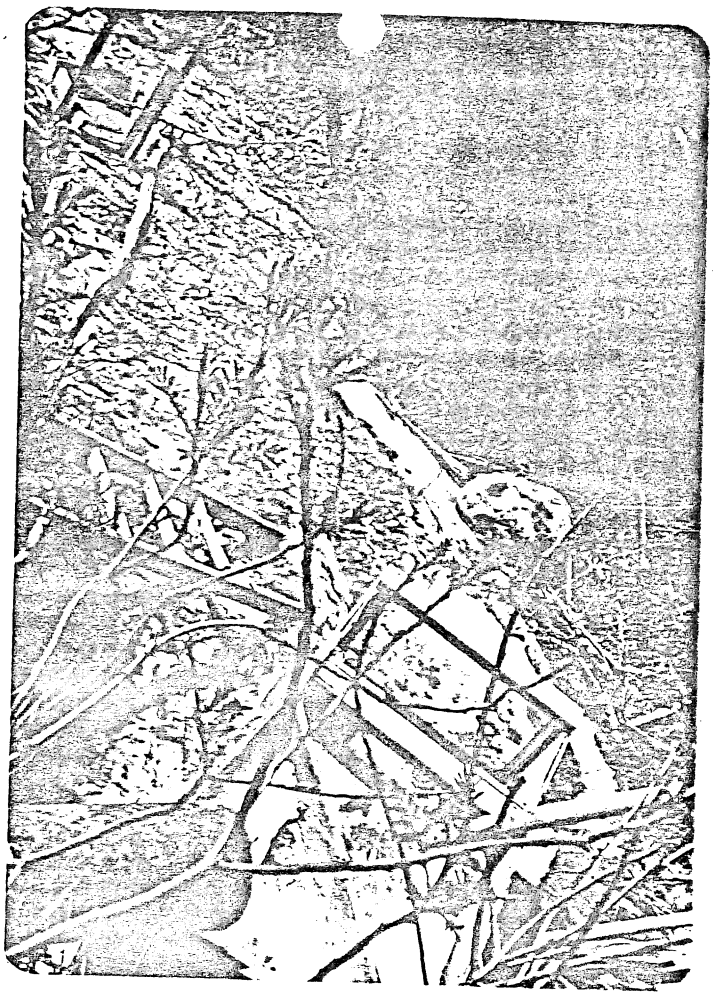
JOHN CERBOCHE

TDD# FS-8103-11

State- MICHIGAN

HOOVER B&B / WASHTENAW CO.
(SALINE DIE CASTING)

Comments: Photograph taken toward the SOUTHWEST, SHOWING THE SITE'S PERMITTED DISCHARGE THAT DRAINS INTO THE SALINE RIVER



Date: 5/21/81

Time: 1:55 A.M. (P.M.)

Photograph By:

JOHN CERBOCHE

TDD# FS-8103-11

State- MICHIGAN

HOOVER B&B / WASHTENAW CO.
(SALINE DIE CASTING)

Comments: Photograph taken toward the NORTH, SHOWING UNUSED SLUDGE POND ACROSS THE RIVER FROM THE SITE

Date: 5/21/31

Time: 2:09 A.M. (P.M.)

Photograph By:

JOHN CEROCKE

TDD# F5-8103-11

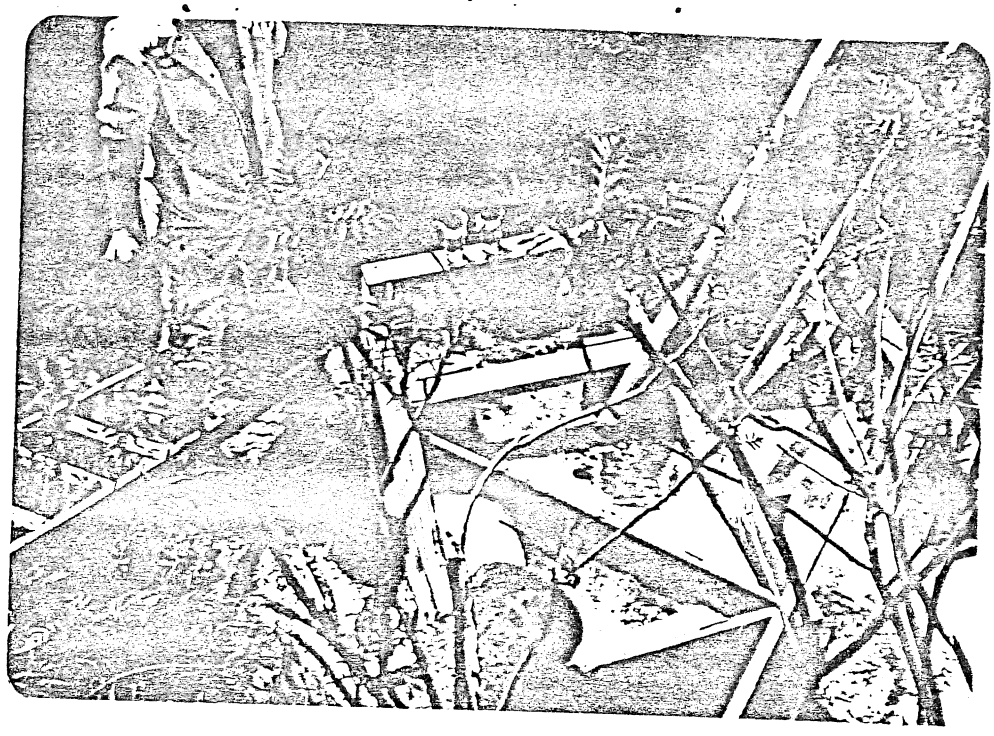
State- MICHIGAN

HOOVER B+B / WASHTENAW Co.
(SAUNDE DIE CASTING)

Comments: Photograph taken

toward the SOUTHWEST, TAKING A

SAMPLE OF THE DISCHARGE



Date:

Time: A.M. P.M.

Photograph By:

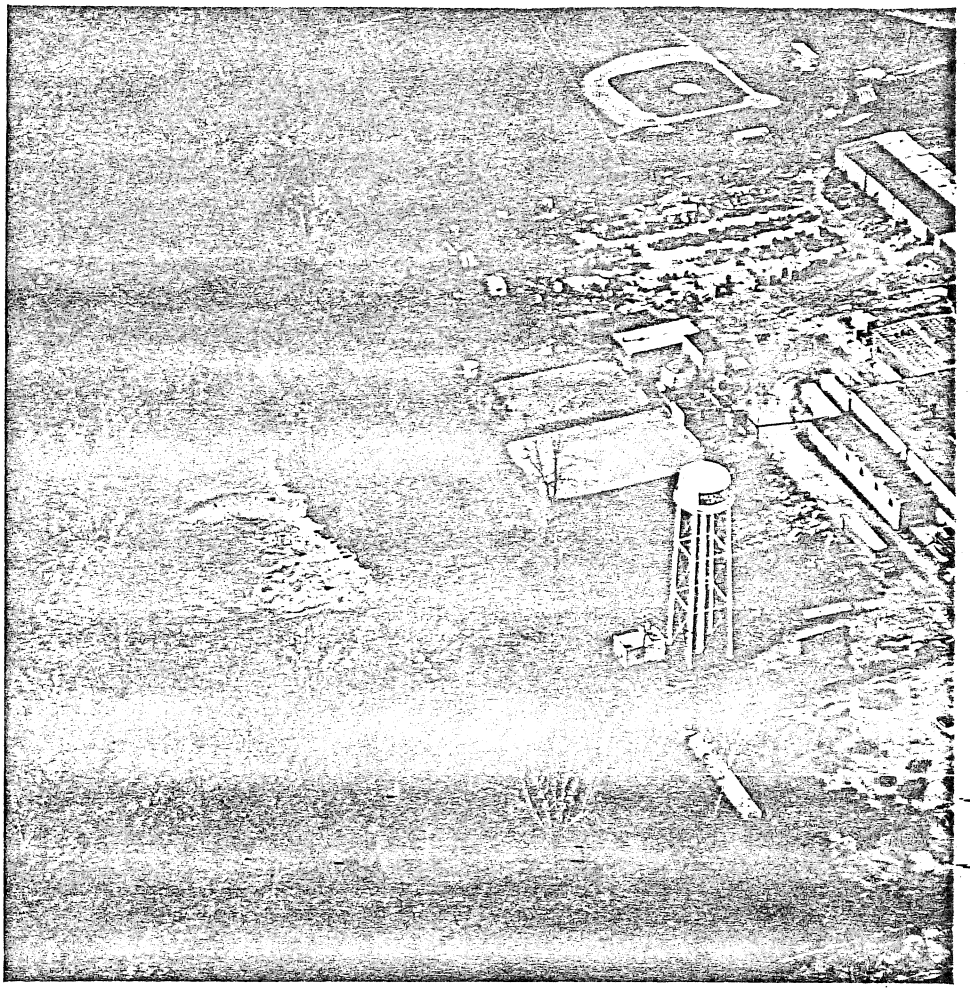
TDD#

State-

/

Comments: Photograph taken

toward the



THIS AERIAL WAS TAKEN OF THE PLANT BY THE COMPANY DURING 1981 AND GIVEN TO THE INSPECTION TEAM. THIS PHOTO SHOWS BOTH SETTLING PONDS AND THE SLUDGE POND ACROSS THE RIVER

HOOVER BALL AND BEARING

SECTION I - BACKGROUND INFORMATION

General Site Description/Ownership

Located in Saline, Michigan the site owned by Hoover Universal Inc., is operated by the Saline Die Casting Division. Formerly know as the Hoover Ball and Bearing Company, Universal Die Casting Division, the plant is situated on approximately 10 acres of land located along the flood plain of the Saline River. Though flooding has not been a problem according to Mr. William Tischler, Technical Director, the site has flooded in the past after extensive heavy rainfall.

Two settling ponds located on-site receive process wastewater from their wastewater treatment facility. A currently unused sludge pond received dewatered sludge from their reactor clarifier. This pond is located across the Saline River. Both settling ponds and the sludge pond are situated on the flood plain of the Saline River.

Site security is minimal, containing a fence that encloses the entire site. The currently unused sludge pond lacks any means of security measures, though access to this area unless by foot can be extremely difficult.

Chromic acid rinse waste, cyanide rinse waste, nickel and acid rinse waste, and alkali rinse waste generally categorize the type of wastes to be found from this platting and casting operation. Process wastewater, quenchwater, and non-contact cooling water are discharged to the Saline River.

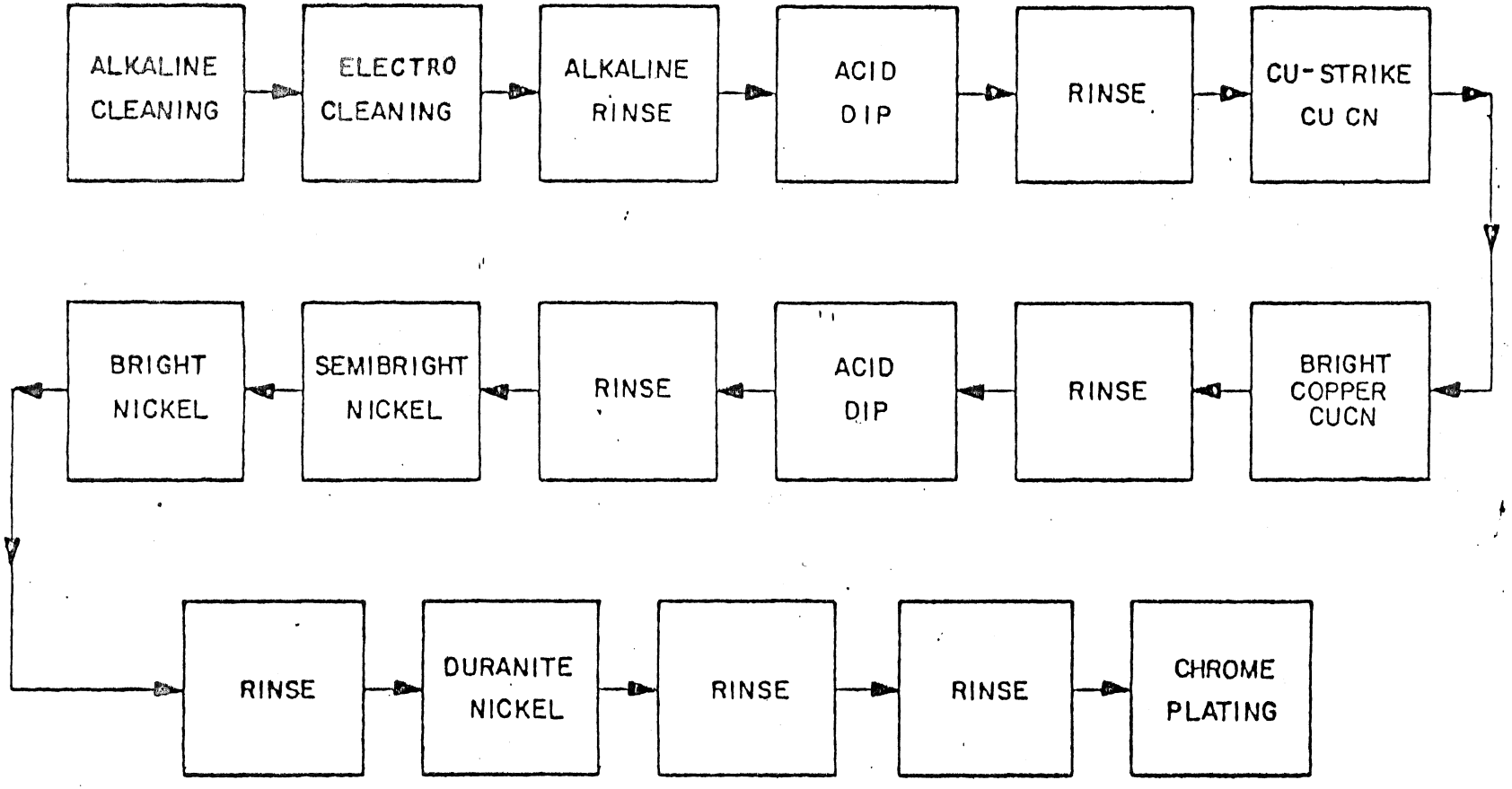
Process Information

Though the site has been in operation since the early 1940's, little has changed in terms of manufacturing since then. Operating a metal casting and electroplating facility the plant in general casts, plates, paints and assembles components for the automobile industry. The general process description can be explained as follows. Raw zinc, melted within several crucible furnaces is transferred to one of their thirteen die casting machines. Various additives, used to protect the die and aid in the die removal are added to this cast. Cooling and removal of the casting is achieved by placing both the die and casting within a quench tank containing water and a quench additive. Using an automatic plater, electroplating of the zinc die cast components is done via a production line consisting of alkaline electro-cleaner rinses, an acid dip, a copper-cyanide plate, a nickel plate and a chrome plate (see Figure 3). The alkaline electro-cleaner consists of a caustic solution with an electric current passing through the tank to remove soil and deposits from the casting. The acid dip is then used to pickle the zinc casting. Following this, the casting is dipped into a copper-cyanide tank containing potassium-cyanide, copper-cyanide and sodium-chloride. The casting then receives a nickel plate within a tank containing nickel chloride, nickel carbonate, nickel sulfate, and boric acid, and is followed by a chrome plating tank containing chromic acid and sulfuric acid.

Wastewater Treatment

Several different types of waste are treated by the plant. These wastes include rinse water from the plating and replating operation, cooling water from two air compressors, and backflush water from the deionizers. Most of the plants wastewater comes directly from the plating and replating lines (see Figure 4).

Figure 3. Electroplating Process Block Diagram



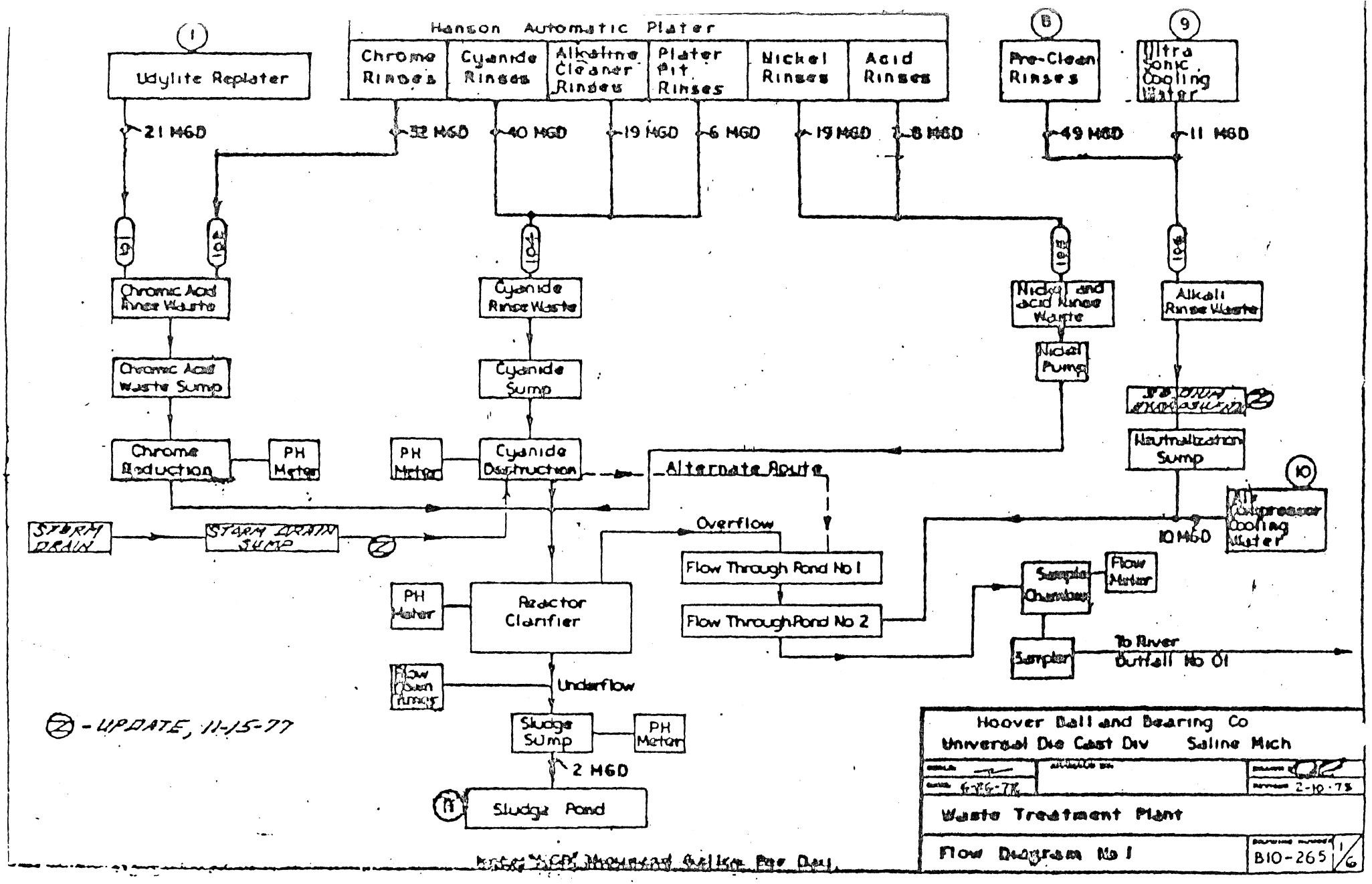


Figure 4 Flow Diagram

Weather Treatment (con't)

Chromium wastes from the plating line, and all wastewater from the replating line are batch treated in either of two 32,000 gallon chrome reduction tanks. The wastewater is sent to the reactor clarifier where the chrome is precipitated.

Cyanide wastes, alkaline electro-cleaner rinses and all spills from the plating lines are pumped to two 16,000 gallon cyanide destruction tanks where they are batch treated by the addition of sodium bisulfite, sodium hypochlorite, and ferrous sulfate. With the pH adjusted for copper precipitation the wastewater is sent to the first of two settling ponds.

Nickel and acid rinse waters are sent directly to the reactor clarifier.

The combined chromium pretreated wastewater and the nickel and acid rinse wastewater enter the reactor clarifier for precipitation.

Alkali rinse water and cooling water is neutralized and pumped directly to the second pond. This pond discharges to the Saline River.

Sludge from the reactor clarifier is dewatered by a filter press with the filtrate returned to chrome reduction. The filter cake is then hauled away. This sludge used to be pumped to their sludge pond across the Saline River.

Wastewater Surveys and Toxicity Evaluations

Extensive wastewater surveys and toxicity evaluations have been conducted by the MDNR. Toxicity evaluations were done in 1977 and 1979, while industrial wastewater surveys were done in 1978, 1979 and 1980.

Monthly operating report data is submitted by the plant as required by their NPDES permit along with monthly data from four monitoring wells that surround their sludge pond.

The MDNR has two monitoring stations in the immediate vicinity of the plant, one upstream and one downstream which monitor ambient water quality within the area.

SECTION II - LOCAL GEOLOGY/SOILS

The general topography seen within Washtenaw County is directly related to glacial activity having eroded, transported and deposited material onto the surface of the land. The Wisconsin glaciation, the last of the four major advances of continental glaciers molded and modified the landscape into its present form seen today.

After the Wisconsin glaciation had receded and the glacial ice had melted, deposits of till, outwash, and lacustrine material remained, though much of this material was reworked and redeposited by subsequent action of water and wind. Kames, valley trains, terraces, and moraines are the most common features seen throughout the county. Glacial till within Washtenaw County comprises the majority of material found. Texturally this material ranges from sandy loam to silty clay and is highly calcareous.

Wells within the area of the site tap a sand and gravel aquifer at depths around 67 feet. Lying above this aquifer is a clay layer with a thickness of approximately 27 feet.

One predominant soil type is found within the area of the site, this soil being the Fox sandy loam, 12 to 18 percent slopes. This soil is found in pitted outwash areas, along streams and drainageways of outwash plains, kames, valley trains, terraces and moraines. This well drained soil, formed in loamy textured and sandy textured gravelly sand has a moderate available water capacity with a moderate permeability and runoff is generally considered to be medium in nature.

SECTION III - ON-SITE INSPECTION/SAMPLING

On-Site Inspection

On May 21, 1981 an on-site inspection was made at the Saline Die Casting Divison site. A complete inspection of the site, which included a tour of the manufacturing plant was made. Throughout the inspection, Mr. Tischler was extremely helpful in explaining the electroplating process and in answering any question which came up. The inspection came to a close after viewing both settling ponds and the sludge pond across the river. Though leachate is supposedly generated by this sludge pond, leachate was not noticed during the inspection.

Sampling

Based upon the information learned from the on-site inspection and in keeping with the direction of the TDD, two hazardous samples were taken from the site. The first sample, Station #1 was taken of the discharge to the Saline River. The second sample, Station #2 was taken of the groundwater obtained from the companies main drinking water well located below their collection tower. These samples hopefully will indicate the type of constituents that may be leaving the site, though not necessarily the quantities.

SECTION IV - FINDINGS

Additional information was obtained through conversations with MDNR personnel, county Health Deparment personnel, information supplied by Mr. Tischler, as well as from the site inspection. The following information will supplement that found in the previous sections:

- Site has filed under RCRA
- Site has a state operating permit
- Site has an NPDES permit
- According to Mr. Barry Johnson from the Washtenaw County Health Department, there have been fish kills downstream from the plant in the past
- During the on-site inspection the estimated freeboard from both settling ponds was less than one foot
- Four monitoring wells have been installed around the unused sludge pond. Depth of these monitoring wells is around six feet
- A new process holding tank is being installed on-site to stabilize any pH fluctuations
- Discrepancies have been reported on several occasions by the MDNR in the analytical results obtained by the plant in relation to the results obtained by the MDNR

SECTION V - RECOMMENDATIONS

At present no recommendations can be made until the analysis of the samples are received.

Groundwater contamination is believed to be occurring from the plants unused sludge pond and also from the unlined settling ponds. Potential contamination to the upper aquifer and not just the lower aquifer as specified by the MDNR is also believed to be occurring, with the possibility for the contamination to by-pass the Saline River in part and move into a more regional flow. Therefore a semi-detailed hydrogeological evaluation should be made to fully define the geology and hydrogeology of the area.